

Selected Readings in
**COMPUTING AND
TELECOMMUNICATIONS**

Editors
Mira Kartiwi
Teddy Surya Gunawan
Aisha Hassan Abdalla Hashim



IIUM Press
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

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Published by:
IIUM Press
International Islamic University Malaysia

First Edition, 2011
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Perpustakaan Negara Malaysia

Cataloguing-in-Publication Data

Mira Kartiwi, Teddy Surya Gunawan, Aisha Hassan Abdalla Hashim:
Selected Readings in Computing and Telecommunications

ISBN: 978-967-0225-81-4

Member of Majlis Penerbitan Ilmiah Malaysia – MAPIM
(Malaysian Scholarly Publishing Council)

Printed by:
IIUM PRINTING SDN. BHD.
No. 1, Jalan Industri Batu Caves 1/3
Taman Perindustrian Batu Caves
Batu Caves Centre Point
68100 Batu Caves
Selangor Darul Ehsan

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11. RADIO PROPAGATION MEASUREMENT AND CHANNEL MODELLING FOR WIRELESS BODY AREA NETWORK

Mimi Aminah bt. Wan Nordin and Norsyaidatul Fairuz bt. Fauziz

ABSTRACT

The increasing use of wireless network in most application has driven the development of wireless body area network (WBAN). WBAN is a wireless communication system, which uses electronic devices to connect to human body. In these networks, various sensors are attached on clothing or on the body or even implanted into the human body. This project aims to study the radio propagation characteristics of WBAN communication system in the range of 2.4 GHz. The project was divided into two parts, namely antenna fabrication, and radio channel measurement in order to propose a simple and efficient channel model for WBAN system. Two parameters that have been used as merits in this project are part of the Friis propagation model, namely the path loss coefficient, α and polarization loss factor, γ . The measurement of signal strength in this project was done using two-microstrip patch antenna operating in the range of 2.4GHz that act as transmitter and receiver. The signal strength of these two devices for different distances is measured using vector network analyzer (VNA) and plotted in MATLAB. By comparing the result of simulation measurement with the experimental measurement, the right value of α and γ can be obtained. Hence, the new channel modelling for this WBAN system can be produced.